

REMARKS

Applicants respectfully request the Examiner to enter the amendments, grant the concurrent petition for extension of time, and reconsider all objections/rejections.

Summary of amendments

Applicants present an amended Abstract. It is in a single paragraph.

Applicants canceled claims 1 and 19 without prejudice or disclaimer.

Applicants added new claims 37 and 42 to replace former claims.

New claims 38-41 related depend from new claim 37.

Applicants amended original claims, where appropriate, to depend from claim 37 or claim 42 since claims 1 and 19 have been canceled.

Applicants respectfully submit that the amended Abstract, new claims 37 through 42, plus the amended dependencies find support in the original application.

Nose reference - Please supply a copy of the full reference

The pending Office Action reports that a full copy of the Nose reference was not available when the PTO mailed the Office Action.

Please supply a full copy of the cited art so that the record is completed and Applicants are afforded a full and fair opportunity to respond, if the next official communication is not the merited notice of allowance.

Objections - formalities

The amended Abstract and new claims respond to the formality matters raised in the Office Action. It is not intended to restrict the claims.

In the newly added claims 37 and 42, fugacity and indoor behavior are related to temporal concentration and/or residual amount. The relationship of fugacity with respect to temporal concentration and residual amount is, for example, fully supported by the description on page 57 and of the specification. Accordingly, the newly added claims 37 and 42 clearly and definitely encompass the relationship between fugacity of the compound and the indoor behavior.

Please reconsider and withdraw the objections and formalities-related rejections under 35 U.S.C. § 112(f)(2).

Please reconsider the restriction requirement

Please reconsider claims 3-18 and 21-36 and allow their examination in an application, this one to be specific. Applicants respectfully submit that all claims can be examined in one application without undue delay or burden. The Examiner has access to or has had cited the ISR which reduces any need to replicate a prior art search.

It is particularly suggested that claim 9 should have been grouped within the elected claims.

Please reconsider and withdraw the requirement for restriction.

The Present Invention

The specification reports that other simulation models do not mention how to solve differential equations, and minute time units set when solving the differential equations are assumed to be constant. Theoretically, the smaller is the minute time unit, the longer becomes the calculation time; whereas the solution would not converge when the minute time unit is large. Accordingly, in the case where a differential equation containing a parameter which changes over time is to be solved, when the minute time unit is set to a constant value so that the solution does not diverge, there is a problem that the processing speed of the computer must be enhanced.

Also, the above-mentioned simulation models fail to mention any security with respect to human bodies.

In order to solve the above-mentioned conventional problems, it is an object of the present invention to provide a method of simulating an indoor behavior of a pesticidal compound, which can process simultaneous differential equations accurately in a short time by automatically setting a minute time unit.

In order to achieve the above-mentioned object, the method of simulating an indoor behavior of a pesticidal compound in accordance with the present invention comprises a step of dividing an indoor environment into predetermined media (constituents) and forming a differential equation concerning a fugacity of the compound in each of the media; a step of determining the fugacity of the compound in each of the media from the differential equation; a step of determining the indoor behavior of the compound from the fugacity of the compound in each of the media; and a step of changing, in response to a fluctuation in mass balance of the compound indoors, a minute time unit used when solving the differential equation.

As the indoor environment is divided into predetermined media, and exchanges of the chemical compound between the media and the like are taken into account, simulation results close to the actual behavior of the compound can be obtained, while the minute time unit can be set automatically in response to fluctuation in mass balance when solving simultaneous differential equations including a parameter which changes over time. Accordingly, when a computer processes the above-mentioned differential equation, accurate solutions can be obtained in a short time.

Preferably, the method of simulating an indoor behavior of a pesticidal compound in accordance with the present invention further comprises a step of evaluating safety of the compound with respect to a human body according to the indoor behavior of the compound.

As a consequence of this configuration, the safety of the pesticidal compound with respect to the human body can be evaluated accurately in a short time. Accordingly, when formulating a chemical such as insecticide including the above-mentioned compound, simulation can be easily repeated while changing conditions, thereby making it easier to formulate a chemical having a high safety conforming to the aimed project.

Compliance with 35 U.S.C. §112 (¶1)

The detailed specification disclosure provides an enabling written description of the inventions claimed so that a person skilled in the art, or the art to which the inventions most

nearly pertain, can make, use and practice them without exercise of independent inventive skill and also without undue experimentation.

It should be specifically considered that new claims 37 and 42 define the inventions and refer to fugacity indoor behavior in connection with temporal concentration and/or residual amount. The Examiner's attention is directed, for instance, to page 57.

The Office Action suggests that the specification discloses the enablement only for V-change, deposition, transference and degradation. Office Action, page 2. However, the specification teaches terms in ventilation and emission rate. It is therefore unreasonable to limit newly added claims 37 and 42 regarding only to V-change, deposition, transference and degradation. The specification includes teachings to determine fugacity by ventilation, as disclosed, for example, on page 51. The specification also teaches determining fugacity by emission rate, for example, as disclosed on pages 152-153. A person skilled in the art can determine at least emission rate, deposition, V-change, transference, ventilation and/or degradation, according to the specification. Additionally, a person skilled in the art can make/use a program for determining fugacity via at least one term selected from emission rate, deposition, V-change, transference, ventilation and degradation.

Accordingly, please reconsider and withdraw the rejection under 35 U.S.C. § 112(f) as to claims 1, 2, 19 and 20, and prospectively as to claims 37 and 42.

Further, it is apparent that a person skilled in the art can evaluate the safety of a compound for humans based on the specification and therefore the specification supplies an enabling written description for the claimed inventions.

Patentable over the Nose Reference

Applicants respectfully traverse the obviousness rejection under 35 U.S.C. § 103(a) of claims 1, 2, 19 and 20 in view of the Nose reference.¹

¹ A complete copy of the reference was not provided to Applicants with the Office Action.

At the time Applicants made their invention, the Nose reference would *not* have suggested to a person of ordinary skill in the art determining fugacity by utilizing any differential equation.

It appears that the Nose reference discloses that “The vertical movement of oxamyl applied to the top soil was described by the differential equation consisting of dispersion coefficient, pore-water velocity, Freundlich’s constants for absorption” This description teaches that the above differential equation is utilized for determining vertical movement of oxamyl, but it does not teach that the differential equation is utilized or even could be utilized to determine fugacity of the compound or another compound.

Applicants respectfully suggest that the reference itself sows the seeds for its withdrawal. It would appear from the Nose reference that the calculated vertical movement of oxamyl means movement measured in units of distance. The Examiner should understand that the vertical movement described in the Nose reference apparently uses centimeter units (cm). The units of measure associated with fugacity are different, in as much as fugacity may be defined using Pascal (Pa) units. The Examiner should furthermore understand that the concepts underlying the different units are also different.

Furthermore, the Nose reference does not disclose any teachings or technical basis for modifying any equation pertaining to vertical movement so that the differential equation determines fugacity of the compound. The Nose reference likewise does not have any teachings for modifying the amount of the vertical movement to fugacity after the vertical movement has been calculated by any differential equation.

Accordingly the concept of “fugacity” is readily differentiated from that of “vertical movement,” whereby it is similarly readily concluded that the Nose reference does not disclose nor would it have suggested “fugacity” of the oxamyl.

Further, since Nose does not disclose or suggest the evaluation of the safety for humans, the amended claims 2 and 20 are unobvious in view of the Nose reference.

Therefore, please reconsider and withdraw the obviousness rejection.

Conclusion

Applicants respectfully submit that their application is in condition for allowance. If the Examiner has any questions, please contact the undersigned.

Respectfully submitted,

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APPENDIX

**CLAIMS AND ABSTRACT AS AMENDED IN RESPONSE TO
THE OFFICIAL ACTION MAILED DECEMBER 31, 2001**

Amendments to existing claims:

Claims 1 and 19 are cancelled.

2. (Amended) A simulation method according to claim ~~1~~ 37, further comprising a step of evaluating safety of said compound with respect to a human body according to the indoor behavior of said compound.

3. (Amended) A simulation method according to claim ~~1~~ 37, wherein said compound is introduced into an indoor space as a solution containing said compound is residually sprayed; and

wherein said media are a spraying site, suspended particles which are divided into at least one kind according to size, indoor air, a floor, a wall, and a ceiling.

5. (Amended) A simulation method according to claim ~~1~~ 37, wherein said compound is introduced into an indoor space as a solution containing said compound is spatially sprayed; and

wherein said media are suspended particles which are divided into at least one kind according to size, indoor air, a floor, a wall, and a ceiling.

7. (Amended) A simulation method according to claim ~~1~~ 37, wherein said compound is introduced into an indoor space as a solution containing said compound is heated to vaporize; and

wherein said media are condensed particles which are divided into at least one kind according to generation and extinction, high-concentration air, medium-concentration air, low-concentration air, a floor, a wall, and a ceiling which is divided into at least one kind according to compound concentration.

20. (Amended) A computer program product according to claim ~~19~~ 42, further comprising, in said program area,

a program for evaluating safety of said compound with respect to human-body according to the indoor behavior of said compound.

23. (Amended) A computer program product according to claim ~~19~~ 42, wherein said compound is introduced into an indoor space as a solution containing said compound is spatially sprayed; and

wherein said media are suspended particles which are divided into at least one kind according to size, indoor air, a floor, a wall, and a ceiling.

New claims 37-42 are added.

Amendments to the Abstract:

ABSTRACT

~~The present invention relates to~~ a method of simulating an indoor behavior of a pesticidal compound, and aims to provide a simulation method which can process simultaneous differential equations necessary for simulation accurately in a short time, and to evaluate safety of the compound with respect to a human body. ~~In order to achieve the above mentioned object, the~~ The simulation method ~~of the present invention comprises~~ includes a step of dividing an indoor environment into predetermined media and forming a differential equation concerning a fugacity of the compound in each of the media; a step of determining the fugacity of the compound in each of the media from the differential equation; a step of determining the indoor behavior of the compound from the fugacity of the compound in each of the media; a step of changing, in response to a fluctuation in mass balance of the compound indoors, a minute time unit used when solving the differential equation; and a step of evaluating, according to the indoor behavior of the compound, safety of the compound with respect to the human body.